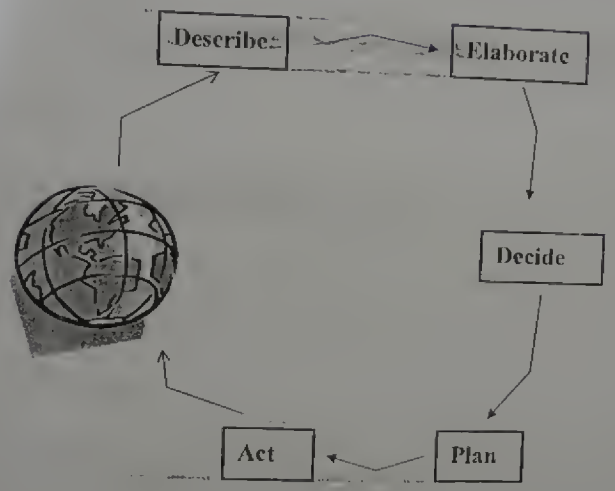
(39)

Thought

Basic function of thought:

To begin our exploration of human thinking, we consider its five core functions, which are to describe, elaborate, decide, plan and guide action. These functions can be seen as forming a circle of thought.

describe - Elobrate - Decide - Plan - Act.



The circle of thought:

The circle of thought begins as our sensory systems take information from the world around us. Our perceptual system describes and elaborates this information, which is represented in the brain in ways that allow us to make decisions, formulate plan, and carry out actions. As our actions change our world, we receive new information and the circle of thought begins again.

(45)

Psychologists new study human thought processes as if they were components in a computer-like information processing system. An information processing system receives information, represents the information with symbols, and then manipulates those representations.

According to this information-processing model, thinking is defined as "the manipulation of mental representations". So information from the world is somewhat transformed as it passes through each stage of processing:

manipulation of mental representations so

In the first stage:

The information about the world reaches the brain by way of the sensory receptors; this stage doesn't require attention.

In the second stage:

(1) The information must be perceived and recognized, using the attentional and perceptual processes. (2) It is also during this stage that the information is consciously elaborated, using short term, or working, memory processes that allow us to think about it in relation to knowledge stores in long term memory. Once the information has been elaborated in this way, we must decide what to do with it.

elaborated

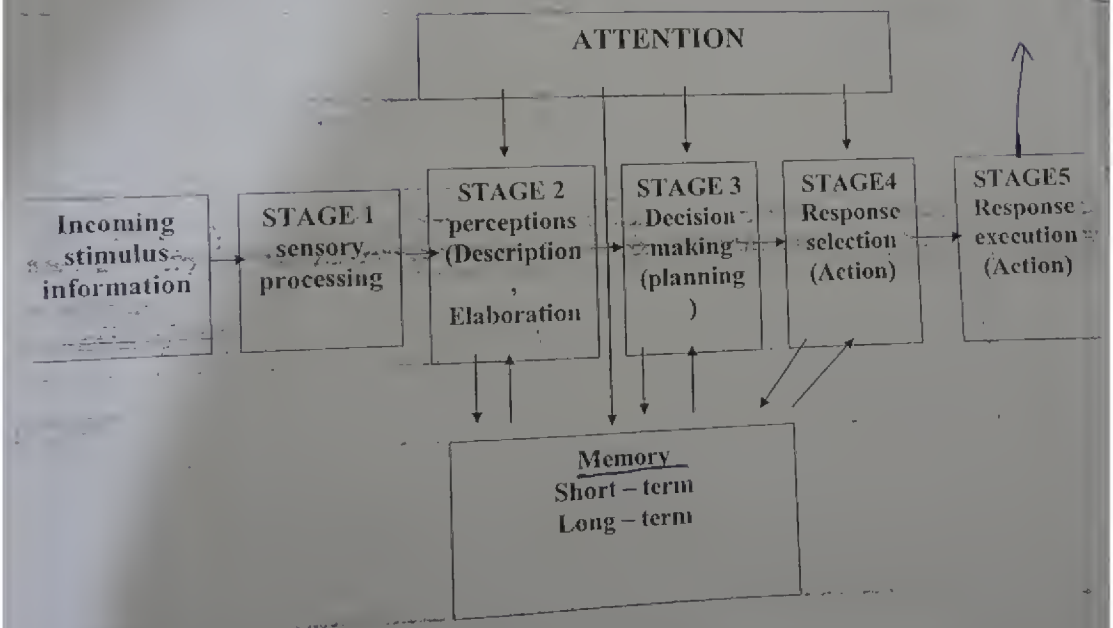
The third stage:

(1) Decision making -also demands attention. The decision may simply be to store the information in memory. (2) If however, a decision is made to take some action, a response must be planned in the third stage, and then (3) carried out through a coordinated pattern of responses- the action itself

In the fourth and fifth stages:

This action usually affects the environment providing new information that in turn, is feedback to the system for processing in the ongoing circle of thought.

-Each stage in the circle of thought takes a certain amount of time, and needs a limited supply of mental energy to be carried out efficiently.



Information – processing Speed: Reaction Time :

It's the time elapsing between the presentation of a stimulus and the appearance of an overt response.

* Factors influencing the reaction time:

1) The Complexity of the decision:

The larger the number of possible actions that might be carried out in response to a set of stimuli, the longer the reaction time. Ex: The tennis player who knows that her opponent usually serves to the same spot on the court will have a simple decision to make when the serve is completed and will react rapidly. In contrast, when she faces an opponent whose serve is less predictable, her reaction will be slower because a more complex decision about which way to move is now required.

Complexity.

2) The stimulus – response compatibility:

If the spatial relationship between a set of stimuli and possible responses is a natural or compatible one, reaction time will be fast. If not, reaction time will be slower. Ex: Imagine standing in front of an unfamiliar stove when a pan starts to boil over. Your reaction time in turning down the heat will depend in part on the stove's design. The response will be quicker on stove in which each knob is next to the burner it controls, than on stove in which knob you should turn is not as obvious .
Incompatible stimulus-response relationships are major factor in causing errors in the use of all kinds of equipment.

3) Expectancy:

Expected stimuli are perceived more quickly and with greater accuracy than those that are surprising.

4) Speed accuracy trade off:

If you try to respond quickly, errors increase; if you try for an error-free performance, reaction time increases.

Mental Representations: The Ingredients of thought

Most psychologists usually describe the ingredients of thought as information. What specific forms can information take in our minds? In other words, how do we mentally represent information? Researchers in cognitive psychology have found that information can be mentally represented in at least four forms:

1) Cognitive maps. 2) Images.
3) Concept schemas.

1) Cognitive maps :

(1) Cognitive map is a mental representation of familiar parts of one's world.

(2) Cognitive maps help us describe the world, plan routes, and reach destinations.

(3) Ex: If you are home alone, suddenly, the power fails. Even though you can't see a thing, you are still able to find a flashlight or candle, not only because memory tells you where it is but because you carry with you a cognitive map. Also you would not have this mental map in an unfamiliar house.

(4) In order to create a cognitive map: our environment is obviously helpful but also the experience of moving through space is enough to allow us to represent information in the form of cognitive maps.

2) Images:

(1) Often, thinking is based on the manipulation of images, which are mental representations of visual information. (2) Research suggests that the manipulation performed on images of objects is very similar to those that would be performed on the objects themselves.

(3) Images contain details about what objects look like, how their component parts are arranged, and what textures they have.

(4) Images not only can be visual but also can involve hearing or even smell, taste or touch.

3) Concept schemas:

(1) Concepts are categories of objects, events, or ideas with common properties.

(2) Concepts may be:-

a) Concrete and visual such as the concepts "round" or "red".

b) Abstract such as the concepts "truth" and "justice".